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10/677,886	10/01/2003	Detlev Marpe	SCHO0154	9699

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EXAMINER	
SMITH, JEFFREY S	
ART UNIT	**PAPER NUMBER**
2635	

DATE MAILED: 11/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 10/677,886	**Applicant(s)** MARPE ET AL.
	Examiner Jeffrey S. Smith	**Art Unit** 2635

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8,9,19 and 20* is/are allowed.

6)☒ Claim(s) *1-7, 10-18, and 21-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 October 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *8/5/2004*.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the drawings show two different figures that are labeled “FIG. 4A.” Also, the brief description of the drawings lists “FIG 4B,” which is not shown in the drawings.

Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities.

On page 16, “The bypass-coding engine 112” should be “The bypass-coding engine 120.”

On page 17, “Fig. 3 shows a picture or decoded” should be “Fig. 3 shows a picture of decoded.”

Throughout the application, starting on page 18, the specification states that some pixels in figure 4a are marked “x” and some are marked “_”. However, in figure 4a, no pixels are marked “_”. The same problem occurs in the description of figure 4b.

On page 20, “the frame mode being represented by double-headed arrow 254” should be “the frame mode being represented by double-headed arrow 256.” Also, row 2n+7 is not shown.

On page 21, for figure 4b, “the top macroblock 252” is inconsistent with the figure. Also, “field mode 256” is also shown in frame mode of figure 4a. Furthermore, the double-headed arrow is labeled 256. Field mode and frame mode are not shown in the drawings.

On page 22, “(filed or frame mode)” should be “(field or frame mode)”.

On page 23, “zick-zack” should be “zig-zag”.

On page 24, “starts at the time, where” should be “starts at the time when”.

On page 25, element 309 is not shown in the drawings.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 23 and 24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. For claims 23 and 24, each claim recites a computer program that is not embodied on a computer readable medium in a way that can be executed by a computer processor. Because these claims recite a computer program per se, they are non-statutory.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-5, 10-16 and 21-26 are rejected under 35 U.S.C. 102(a) as being anticipated by Proposed Cleanup Changes for CABAC by Marpe et al. ("Marpe").

For claim 1, Marpe discloses investigating as to whether a neighboring portion of the video frame neighboring the predetermined portion is precoded in the first way or the second way (Section 2.3 "Let A and B denote the spatially neighboring MB pairs to the left and on top of the current MB pair X, respectively, then we choose the conditioning term ctx_mb_field (X) according to the template ctx_var_spat1"), in order to obtain a binary value ("a binary-valued frame/field flag...is required").

Marpe further discloses assigning one of at least two context models to the predetermined portion of the video frame based on the binary value, wherein each context model is associated with a different probability estimation ("This results in 3 additional contexts models for coding of mb_field_decoding_flag". Also, having a context model associated with a probability is inherent in context-based adaptive binary arithmetic coding).

Marpe discloses arithmetically encoding the syntax element into the coded bit stream based on the probability estimation with which the assigned context model is associated (arithmetic coding is inherent in context-based adaptive binary arithmetic coding (CABAC)).

For claim 2, Marpe discloses wherein the video frame is spatially subdivided into an array of macroblock pairs, each macroblock pair consisting of two macroblocks, and the predetermined portion is a predetermined macroblock in a predetermined macroblock pair and the neighbouring portion is a neighbouring macroblock in a neighbouring macroblock pair adjacent to the predetermined macroblock pair.

For claim 3, Marpe discloses that the syntax element is contained several times in the precoded video signal, each time being associated with a different portion of the video frame, and wherein the method is conducted each time. See for example, the conditioning term, which contains the syntax elements for macroblocks A and B.

For claim 4, Marpe discloses that the step of investigating comprises the step of investigating a syntax element associated with the neighbouring portion. See for example, the conditioning term, which contains the syntax elements for neighboring macroblocks A and B.

For claim 5, Marpe discloses that the video frame is composed of picture samples, the picture samples belonging either to a first or a second field being captured at different time instants, and wherein the syntax element is a frame/field decoding flag indicating as to whether the predetermined macroblock merely contains either picture samples belonging to the first field or picture samples belonging to the second field or the predetermined macroblocks contains both, picture samples belonging to the first field and picture samples belonging to the second field, and wherein the step of investigating comprises investigating as to whether said neighbouring macroblock merely contains either picture samples belonging to the first field or picture samples belonging to the second field, or the neighbouring macroblock contains both, picture samples belonging to the first field and picture samples belonging to the second field.

For claim 10, the step of arithmetically encoding in CABAC inherently includes deducing a current arithmetic code interval in accordance with the probability estimation with which the assigned context model is associated to one of two subintervals into which the probability estimation with which the assigned context model is associated separates the current arithmetic code interval, in order to obtain a reduced current arithmetic coding interval, wherein the coded bit stream depends on the reduced current arithmetic coding interval. See for example “Joint Final Committee Draft (JFCD) of Joint Video Specification” issued by the Joint Video Team (JVT) on August 10, 2002 (ITU-T Rec. H.264 & ISO/IEC 14496-10 AVC).

For claim 11, the step of adapting the probability estimation with which the assigned context model is associated based on the syntax element is inherent in CABAC.

Claims 12-16 and 21-22 recite a method for decoding a syntax element from a coded bit stream. These claims are similar to the methods for encoding as recited in claims 1-5 and 10-11. Although Marpe does not explicitly recite the decoding steps, these steps are inherently performed using the frame/field decoding flag.

Claim 23 recites a computer program having instructions for performing a method for encoding a syntax element. Although Marpe does not explicitly state that the frame/field decoding flag is used by a computer program, the flag that is disclosed is clearly part of a computer program that performs these functions.

Claim 24 recites a computer program for decoding a syntax element. Clearly, the decoding flag is used to decode the syntax element.

Claim 25 recites an apparatus for encoding a syntax element. The decoding flag of Marpe is part of an apparatus that encodes the syntax element.

Claim 26 recites an apparatus for decoding a syntax element. The decoding flag of Marpe is part of an apparatus that decodes the syntax element.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 6-7 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marpe in view of U.S. Patent No. 6,980,596 issued to Wang et al. ("Wang").

For claim 6, Marpe discloses the elements of base claim 1.

Marpe does not disclose computing a neighboring macroblock address.

Wang discloses a) computing a neighbouring macroblock address based on a macroblock address of the predetermined macroblock in order to obtain a computed neighbouring macroblock address for the neighbouring macroblock; b) checking, as to whether the computed neighbouring macroblock address is assigned one of the macroblocks in the video frame, in order to obtain a check result; c) if the check result is positive, investigating as to whether the macroblock assigned to the computed neighbouring macroblock address is precoded in the first way or the second way; d) if the check result is positive and the macroblock assigned to the computed neighbouring macroblock address is precoded in a predetermined one of the first and the second way, setting the binary value to a first bit value; and e) if the check result is negative or the macroblock assigned to the computed neighbouring macroblock address is not precoded in the predetermined one of the first and the second way, setting the binary value to a second bit value being different to the first bit value. See Wang column16, lines 1-7.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the field/frame coding process of Marpe to include computing the neighboring block address of Wang, because this allows for a way of performing intra mode prediction of digital video content at the macroblock level. See Wang, column 15 lines 56-61.

For claim 7, Wang discloses that macroblocks are grouped into slices and step b) is adapted such that the check result is merely positive if the macroblock assigned to the computed neighbouring macroblock address belongs to the same slice as the predetermined macroblock. See Wang, Figure 2.

For claims 17 and 18, Marpe discloses the elements of base claim 12, and Wang discloses the elements of dependents claims 17 and 18.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-5, 11-16, and 21-26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-25 of copending Application No. 10/769,403. Although the conflicting claims are not identical, they are not patentably distinct from each other because the elements of these claims have already been claimed in the co-pending application.

For example, in claim 1, "investigating as to whether a neighboring portion of the video frame neighboring the predetermined portion is precoded in the first way or the second way, in order to obtain a binary value" is an obvious variation of "determining...whether the current macroblock pair region is of a first or second distribution type" as recited in claim 1 of the co-pending application.

"assigning one of at least two context models to the pre-determined portion of the video frame based on the binary value, wherein each context model is associated with a different probability estimation" is an obvious variation of "assigning one of at least two context models to the current syntax element based on a pre-determined attribute of the neighboring macroblock, wherein each context model is associated with a different probability estimation" as recited in claim 1 of the co-pending application.

Also, the element of "arithmetically encoding the syntax element into the coded bit stream based on the probability estimation with which the assigned context model is associated" is identical to "arithmetically encoding" as recited in claim 1 of the co-pending application.

For claim 2, "wherein the video frame is spatially subdivided into an array of macroblock pairs, each macroblock pair consisting of two macroblocks, and the predetermined portion is a predetermined macroblock in a predetermined macroblock pair and the neighbouring portion is a neighbouring macroblock in a neighbouring macroblock pair adjacent to the predetermined macroblock pair is an obvious variation of "the video frame being spatially divided up into macroblock pair regions, each macroblock pair region being associated with a top and bottom macroblock," as recited in claim 1 of the co-pending application.

For claim 3, "the syntax element is contained several times in the precoded video signal, each time being associated with a different portion of the video frame, and wherein the method is conducted each time," is an obvious performance of the method of claim 1 of the co-pending application, because the syntax element would be encoded several times, along with the several macroblocks of the image.

For claim 4, “the step of investigating comprises the step of investigating a syntax element associated with the neighbouring portion” is an obvious variation of “determining…whether the current macroblock pair region is of a first or second distribution type” as recited in claim 1 of the co-pending application.

For claim 5, the frame/field decoding flag is recited in claim 7 of the co-pending application.

For claim 10, deducing a current arithmetic code interval in accordance with the probability estimation is an obvious variation of “arithmetically encoding…based on the probability estimation” as recited in claim 1 of the co-pending application.

For claim 11, adapting the probability estimation is an obvious variation of arithmetically encoding the syntax element into a coded bit stream based on the probability estimation with which the assigned context model is associated as recited in claim 1 of the co-pending application.

For claim 12, a method of decoding a syntax element is an obvious variation of decoding a syntax element as recited in claim 12 of the co-pending application.

For claim 13, the macroblock pairs are in claim 12 of the co-pending application.

For claim 14, “the syntax element is contained several times in the precoded video signal, each time being associated with a different portion of the video frame, and wherein the method is conducted each time,” is an obvious performance of the method of claim 12 of the co-pending application, because the syntax element would be encoded several times, along with the several macroblocks of the image.

For claim 15, “the step of investigating comprises the step of investigating a syntax element associated with the neighbouring portion” is an obvious variation of “determining…whether the current macroblock pair region is of a first or second distribution type” as recited in claim 12 of the co-pending application.

For claim 16, the frame/field decoding flag is found in claim 18 of the co-pending application.

For claims 21-22, the probability estimation is an obvious variation of the probability estimation of claim 12 of the co-pending application.

For independent claims 23, 24, 25, and 26, these claims are rejected for the reasons given with respect to independent claims 1 and 12 as discussed above.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

Claims 8-9 and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. For claims 8 and 19, the element of “steps a) to e) are performed another time using a different dependency on the macroblock address of the predetermined macroblock in step a), thereby obtaining a further binary value, and wherein the step of assigning is adapted to perform association based on both binary values," is neither disclosed nor suggested in the art of record.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The 1993 article by Puri et al. and U.S. Patent No. 5,227,878 issued to Puri et al. disclose adaptive frame/field coding syntax used in MPEG-2.

U.S. Patent Application Pub. No. 2005/0053296, U.S. Patent No. 6,275,533 issued to Nishi, U.S. Patent No. 5,347,308 issued to Wai, U.S. Patent No. 5,091,782 issued to Krause et al., and U.S. Patent No. 5,434,622 issued to Lim disclose macroblock frame/field coding.

U.S. Patent No. 6,927,710 issued to Linzer et al. and U.S. Patent No. 6,795,584 issued to Karczewicz et al. disclose context based adaptive binary arithmetic coding.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey S. Smith whose telephone number is 571 270-1235. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marvin Lateef can be reached on 571 270-1245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSS October 27, 2006
JSS

MARVIN LATEEF
SUPERVISORY PATENT EXAMINER